

REMARKS/ARGUMENTS

Claims 1-4 and 12-15 stand rejected, with claims 5-11 objected to in the outstanding Official Action. Claims 5 and 6 have been amended and claims 4 and 7-11 cancelled without prejudice. Therefore, claims 1-3, 5, 6 and 12-15 are the only claims remaining in this application.

Applicants note that the present application is a national entry of PCT/GB99/04260 and therefore the U.S. Patent and Trademark Office is subject to the Patent Cooperation Treaty rules regarding national phase entry applications. Applicants have claimed priority through the PCT International application to the original GB Application 9827944.1 filed December 19, 1998. Yet, the Official Action Summary Sheet contains no mention of applicants' claim for priority or the U.S. PTO constructive receipt of the certified copy of the priority document. Confirmation of the priority claim and constructive receipt of the certified copy of the priority document is respectfully requested.

It is also noted that applicants' original national phase filing included a PTO Form 1449 citing the prior art considered by WIPO in the PCT International application prosecution. Inasmuch as these documents have already been transmitted to the U.S. Patent and Trademark Office and should be considered by the Examiner, acknowledgment of their receipt and consideration by initialing, dating and returning a signed copy of the PTO Form 1449 is respectfully requested.

In the Official Action on page 2, the Examiner objects to the arrangement of the specification.

The Patent Office objects to the arrangement of the specification. It is also appreciated that the Examiner has brought the arrangement of the specification to the applicant's attention. It is noted that the objection to the arrangement appears to be an indication that the originally filed specification (transmitted from WIPO) does not meet the formality requirements of the U.S. Patent and Trademark Office. The Patent Office is reminded that the U.S. Patent and Trademark Office must comply with all articles of the Patent Cooperation Treaty (PCT) including Article 27. It has been held that:

"if the rule and interpretation of the PTO conflicts with the PCT, it runs afoul of Article 27 of the PCT which provides in part:

- (1) No national law shall require compliance with requirements relating to the form or contents of the international application different from or additional to those which are provided for in this Treaty and the Regulations."
Caterpillar Tractor v. Commissioner, 231 USPQ 590, 591 (EDVA 1986).

The Patent Office has referenced this decision in the Official Gazette dated September 9, 1986 (1070 TMOG 5).

As a consequence, the Patent Office may not require specification format changes as long as the originally submitted documents comply with the PCT requirements. Inasmuch as this specification was forwarded for WIPO, by definition, it meets the PCT requirements (it is not forwarded until it meets PCT requirements). Therefore, the objection to the specification is respectfully traversed and reconsideration thereof is respectfully requested.

Notwithstanding the above, applicant has added headings and subheadings to the specification.

The specification is objected to on page 6, line 28, and the Examiner's proposed correction has been incorporated into this page.

The Examiner also objects to the specification under Rule 71 as allegedly being "incomprehensible." The Examiner specifically indicates a failure to understand the specification on page 9, lines 20-24. Applicants believe that this is fairly obvious in view of the specification to those having ordinary skill in the art at the time of the invention.

As the Examiner will appreciate from a review of the Background of the Invention, problems are caused by using binary gray scales, in that the DC component at an individual pixel may vary. It is desirable to maintain a DC balance, i.e. have the same number of zeros as ones in a binary application to a pixel. On page 9, the example is given indicating that if the binary number for gray scale level 15 is given for four frames in a row, there will be a total of 16 ones and 8 zeros indicating a 2 to 1 mismatch between ones and zeros and an absence of DC balance.

The present invention recognizes that the same average gray scale 15 could be provided by utilizing the binary number for 16 one time, the binary number for 14 one time and the binary number for 15 twice for those same four frames in which case there are a total of 12 ones and 12 zeros, indicating DC balance for that pixel over those four frames.

The Examiner might have some confusion as the binary numbers as presented in the specification have their most significant digit on the right-hand side and the least significant digit on the left (the system in which the binary number 1 is 100000), whereas in many other applications the binary number is reversed, with the most significant digit on the left and the least significant digit on the right (the system in which the binary number 1 is 000001).

Thus, the present invention seeks to provide a solution to the DC balance problem and does so by providing different gray scales so that the result is DC balance over a number of frames with the gray scale being as close to the desired gray scale as possible. A number of different methods of accomplishing this result are set out in applicants' specification.

It is submitted that in view of the above explanation, the disclosure in applicants' specification would be readily apparent to those having even ordinary skill in the electro-optic modulator art.

The Examiner suggests that this application admits of illustration by drawing to facilitate understanding of the invention. Applicants have included a drawing and a reference to the drawing in the amended specification in which the drawing is a block diagram of one embodiment of the present invention. The array of light modulating pixels 10 is driven by driver circuit 12 in the manner specified in applicants' specification. Upon approval of the proposed drawing and receipt of a Notice of Allowance, applicants will submit a formal drawing if needed.

Claims 5-11 stand objected to being in improper form. Specifically, these claims were dependent from claim 4 which itself is a multiple dependent claim. Applicants have amended claims 5 and 6 to be dependent from claims 1 or 2, thereby avoiding dependency from claim 4 and any future problem. Claims 7-11 have been cancelled without prejudice, thereby obviating the problem. Accordingly, examination of claims 5 and 6 on the merits is respectfully requested.

Claims 1-4 and 12-15 stand rejected under 35 USC §112 (first paragraph) as containing subject matter not described in the specification. The Examiner admits that the driving means and its interrelationship is disclosed, but suggests that the specification is not enabling "as how to [sic] one of ordinary skill in the art would actually arrange the driving circuit to alter n-digit number as claimed and how the dc balance is improve/[sic] by that arrangement."

The Examiner's attention is directed to the sentence bridging pages 10 and 11 in which the specification teaches that one way to derive the gray scale combinations would be to use a look-up table. Look-up tables are a common way of accessing a predetermined output with a conventional address input. In view of the above discussion on page 9, in order to provide gray scale image 15 at a pixel for four frames, the look-up table would access gray scale level 14 for one frame, gray scale level 15 for two frames and gray scale level 16 for one frame, so as to provide the gray scale of 15 for the desired four frames.

Look-up tables are well known in the art and their application is clearly obvious to those of ordinary skill in the art, especially in view of the present specification. Those of ordinary skill in the art of electro-optic modulators would have knowledge and experience of driver circuits for driving pixels to particular gray scale levels, and the logic circuits could clearly include a look-up table in order to drive the pixels and achieve the desired DC balance. Accordingly, applicants' specification is clearly sufficient to disclose the invention to those of ordinary skill in the art and to permit one of ordinary skill in the art to practice the invention "without undue experimentation." Therefore, any further rejection of claims 1-4 and 12-15 under 35 USC §112 (first paragraph) is respectfully traversed.

While the Examiner alleges that "claims 1-4 and 12-15 are generally narrative and indefinite, failing to conform with current U.S. practice," there appears to be no rejection of these claims under the second paragraph of §112. However, should the Examiner have intended such a rejection, it is noted that applicants have amended the independent claims to more positively recite both apparatus and method claims under U.S. patent practice. The recitation of one or more structures and their interrelationship and one or more method steps and their sequence is now clearly set forth in these claims. Accordingly, these claims are now believed to clearly comply with U.S. patent claim practices required under 35 USC §112 and any further rejection thereunder is respectfully traversed.

The Examiner's citation of art believed to be pertinent to the present claims is appreciated. The fact that the Examiner has not applied this art to any of applicants'

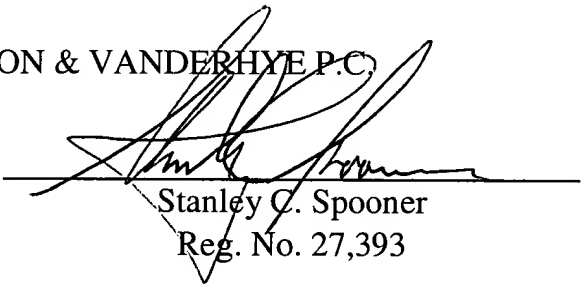
claims 1-3 and 12-15 is appreciated as an indication that the claims are patentable over this prior art.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that pending claims 1-3, 5, 6 and 12-15 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact applicant's undersigned representative.

Respectfully submitted,

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By: _____


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Enclosure: Figure 1